GPS/GIS Technologies
Supplement 1.7

List of Technological Applications

Students will set up spreadsheet/data base templates for each project. After each field exercise, students will record and store the information. The table below lists, by project, information that should be included. Students will need manuals that are specific to the spreadsheet/data base software the class is using.

Students will use the information stored in the spreadsheet/data base for statistical analysis and interpretation. In the Revegetation and the Prairie Dogs sections of this manual, supplements have been included to assist students in determining measures of central tendency, measures of dispersions, chi-square goodness of fit, etc. For example, the Revegetation and Prairie Dogs projects could use the chi-square test to compare vegetation and soils.

Revegetation	Prairie Dogs
• participants • date • time • location • elevation • number of live plants, by species and dates over a 3-year period • basal area • plant height • number of seedheads • soil type • rainfall • irrigation amounts • data from germination charts • etc.	• participants • date • time/hours above ground • time/hours feeding • weather • behaviors -- alarm barks, tail flickings, reactions to alarm bark, all-clear calls, teeth chattering, screams, kissing, anal sniffing, grooming, proximity, sunning, stretching, feeding, playing, reaction to birds, reaction to reptiles, reaction to insects, reaction to small mammals, reaction to livestock, reaction to large mammals, reaction to predators, reaction to observers • transect data--soil type, plant species populations • number of prairie dogs • number of burrows • etc.
Water Quality	**Cave Swallows**
• participants • date • time • location • sample readings--temperature, dissolved oxygen, pH, electrical conductivity, alkalinity, nitrates	• participants • date • time • banding trip number • hatch year • weather • bat flight description

• heavy metal readings--ICP analysis, AA analysis, performance testing, reproducibility test • etc.	• under appropriate category (new or retrap), the following: band number, sex (if known), left wing measurement, right wing measurements, tail measurement, weight, presence of brood patch, presence of ectoparasites, plumage abnormalities, presence of insects in mouth, presence of mud • etc.

In addition to the use of software like Excel, students will use GPS and GIS technologies to map locations and analyze data for the Revegetation and Prairie Dog projects. The following table lists some of the maps students will generate with ArcView after collecting points with the Newton.

Revegetation	Prairie Dogs
• map showing experimental area • map of each plot • map of each subplot • map showing each line of transplants, by species • map of all surviving plants, by species—experimental areas • map of all surviving plants, by species—transplants within park • map showing all dead transplants, by species • etc.	• map of capture site • map of release site (poultry fence) • map showing set of transects at the relocation site • map showing set of transects nearby the relocation site • map of showing initial confinement area -- poultry fence boundaries at release site • map showing cage locations • map showing locations of burrows • etc.